CLAIMS

Sub A1

1. A method for striping packets across pipelines of a processing engine within a network switch, the processing engine having a plurality of processors arrayed as pipeline rows and columns embedded between input and output buffers, each pipeline row including a context memory, the method comprising the steps of:

organizing the context memory as a plurality of window buffers of a defined size;

apportioning each packet into contexts corresponding to the defined size associated with each window buffer; and

correlating each context with a relative position within the packet to thereby facilitate reassembly of the packet at the output buffer, while obviating out-of-order issues involving the contexts of the packet.

2. The method of Claim 1 further comprising the step of organizing the processors and context memory of each pipeline row as a cluster.

3. The method of Claim 2 wherein the step of apportioning comprises the steps of:

segmenting the packet into fixed sized contexts at the input buffer;

sequentially passing the contexts to the clusters; and

storing the fixed sized contexts in appropriate window buffers of the context memories.

4. The method of Claim 3 wherein the step of correlating comprises the step of providing a program counter entry point function to indicate the relative position of each context within the packet.

5. The method of Claim 3 wherein the relative position comprises one of a beginning, middle and end context of the packet.

6. The method of Claim 3 further comprising the steps of:

processing the context at a source processor of the cluster;

communicating an intermediate result relating to processing of the context to a destination processor of a neighboring cluster.

7. The method of Claim 6 wherein the step of communicating comprises the step of providing an intercolumn communication mechanism configured to forward the intermediate result from the source processor to an address of the destination processor.

8. The method of Claim 3 further comprising the step of changing the size of a fixed sized context at the context memory of a cluster.

9. The method of Claim 8 wherein the step of changing comprises the steps of:

deleting a portion of the fixed sized context stored in the window buffer; and

substituting the deleted portion of the context with information stored at another location of the context memory.

10. The method of Claim 9 wherein the substituted information is one of larger than and smaller than the deleted portion of the fixed sized context.

11. A system for striping packets across pipelines of a processing engine within a network switch, the processing engine having a plurality of processors arrayed as pipeline rows and columns embedded between input and output buffers, the system comprising:

a context memory within each pipeline row, the context memory organized as a plurality of window buffers of a defined size;

a segmentation unit adapted to apportion each packet into contexts for processing by the processors, each context corresponding to the defined size associated with each window buffer; and

a mapping mechanism configured to correlate each context with a relative position within the packet to thereby facilitate reassembly of the packet at the output buffer, while obviating out-of-order issues involving the contexts of the packet.

12. The system of Claim 11 wherein the processors and context memory of each pipeline row are organized as a cluster.

13. The system of Claim 12 wherein the mapping mechanism comprises a program counter entry point function that indicates the relative position of each context within the packet.

14. The system of Claim 13 wherein the relative position comprises one of a first, last and intermediate portion of the packet.

15. The system of Claim 13 further comprising an intercolumn communication mechanism configured to forward an intermediate result relating to processing of a context by a source processor to a destination processor.

16. A computer readable medium containing executable program instructions for striping packets across pipelines of a processing engine within a network switch, the processing engine having a plurality of processors arrayed as pipeline rows and columns embedded between input and output buffers, each pipeline row including a context memory, the processors and context memory of each pipeline row organized as a cluster, the executable program instructions comprising program instructions for:

organizing the context memory as a plurality of window buffers of a defined size;

apportioning each packet into contexts corresponding to the defined size associated with each window buffer; and

correlating each context with a relative position within the packet to thereby facilitate reassembly of the packet at the output buffer, while obviating out-of-order issues involving the contexts of the packet.

17. The computer readable medium of Claim 16 further comprising program instructions for:

segmenting the packet into fixed sized contexts at the input buffer;

sequentially passing the contexts to the clusters; and

storing the fixed sized contexts in appropriate window buffers of the context memories.

18. The computer readable medium of Claim 17 wherein the program instruction for correlating comprises the program instruction for providing a program counter entry point function to indicate the relative position of each context within the packet.

19. The computer readable medium of Claim 17 further comprising program instructions for changing the size of a fixed sized context at the context memory of a cluster.

20. The computer readable medium of Claim 19 wherein the program instruction for changing comprises program instructions for:

deleting a portion of the fixed sized context stored in the window buffer; and

substituting the deleted portion of the context with information stored at another location of the context memory.